

DIVISION 11 - EQUIPMENT

SECTION 11200

PUMPING EQUIPMENT

PART 1 - GENERAL

1.1 SCOPE

- A. The Contractor shall furnish all plant, labor, equipment, appurtenances and materials, and perform all operations in connection with the installation and start up of all pumping equipment as shown on the drawings and called for hereinafter including two new leachate pumps in both the new air stripper influent pump station and the new air stripper effluent pump station, and the replacement of the existing Tank T-1 leachate pump.
- B. The Contract Drawings and Specifications have been prepared based on the use of Grundfos submersible well pumps and accessories or equal approved by the Owner and the Engineer. Alternate pumps may require modifications to the design which is based on Grundfos submersible well pumps, and the Contractor shall make all such modifications as necessary at no additional cost to the Owner.

1.2 QUALITY ASSURANCE

- A. The Contractor shall insure that the pumps and motors are properly installed with no pipe strain transmitted to the pump casing.
- B. The equipment furnished shall be standard products in regular production by manufacturers regularly engaged in the production of high quality equipment of this type and shall have been in satisfactory and successful operation for a period of at least five (5) years.
- C. Material used in the manufacture of the pumping equipment shall be of the best quality used for the purpose in general commercial practice. Material shall be free from all defects and imperfections that might affect the serviceability of the finished product.
- D. To assure a properly integrated and compatible system, all equipment described in this section shall be furnished by the pump manufacturer, who shall assume full responsibility for the proper operation of the pumps and associated equipment.

1.3 SUBMITTALS

- A. The Contractor shall submit technical information and certificates to the Engineer.

B. The Contractor shall supply six (6) sets of the Manufacturer's Standard Submittal Drawings, Operating & Maintenance Instruction Manuals and Parts List to the Engineer. Standard submittals will consist of:

1. Pump Performance Curves
2. Pump Outline Drawing
3. Accessories Drawings
4. Electrical Motor Data
5. Control Drawing and Data
6. Typical Installation Guides
7. Technical Manuals
8. Operation and Maintenance Manual
9. Parts List
10. Printed Warranty
11. Manufacturer's Equipment Storage Recommendations
12. Manufacturers Standard Recommended Start-Up Report Form

1.4 FACTORY TESTING

A. Testing performed upon each pump shall include the following inspections:

1. Impeller, motor rating and electrical connections shall be checked for compliance with this specification.
2. Each pump shall be run for a minimum of 2 hours while voltage, current temperature and other significant parameters are recorded.
3. Motor and cable insulation shall be tested for moisture content or insulation defects.

B. A written quality assurance record confirming the above testing/inspections shall be supplied with each pump at the time of shipment.

C. Each pump shall be tested in accordance with the latest code of the Hydraulic Institute (H.I.) at the manufacturer to determine head vs. capacity and kilowatt draw required.

1.5 START-UP SERVICES

A. The equipment manufacturer shall furnish the services of a qualified factory trained field engineer for one, 8-hour working day at the pump station to inspect the installation and instruct the Owner's personnel on the operation and maintenance of the pumping units. Following this inspection, the manufacturer shall submit a certificate, stating that all pumps were properly installed, including field verification checks as follows:

1. Check for proper rotation.
 2. Check power supply voltage.
 3. Measure motor operating load and no load current.
- B. During this initial inspection, the manufacturer's service representative shall review recommended operation and maintenance procedures with the Owner's personnel.

1.6 PUMP WARRANTY

- A. The pump manufacturer shall provide a 1-year warranty for the pumps from the date of start-up, that the pumps and all equipment he provides will be free from defects in material and workmanship.
- B. In the event a pump component fails to perform as specified or is proven defective in service during the warranty period, the manufacturer shall repair or replace, at his discretion, such defective part. He shall further provide, without cost, such labor as may be required to replace, repair or modify the pumps and provide another 12-month warranty period.

1.7 REFERENCE STANDARDS

- A. The work in this section is subject to the requirements of applicable portions of the following standards:
- Hydraulic Institute Standards
 - IEEE Standards
 - NEMA Standards
 - OSHA Rules and Regulations

PART 2 - PRODUCTS

2.1 NEW AIR STRIPPER INFLUENT PUMP STATION LEACHATE PUMPS

- A. The contractor shall furnish and install, as shown on the plans, two submersible Grundfos well pumps in the new Air Stripper Influent Pump Station. The pump model shall be a 4-inch, product number 85S15-1. Each pump shall not be fitted with a built-in non-return valve so as to allow the pump discharge piping to drain back after each cycle to prevent freezing in the winter. Provide 3-phase motors of the canned type with sand-shield, liquid lubricated bearings and pressure equalizing diaphragm. The material for the pump, impeller, and motor is stainless steel 1.4301 DIN W.-Nr. 304 AISI and is suitable for vertical installation. The maximum pump speed is 3450 rpm with a rated flow of 75 gpm at TDH of 40 feet, and a 1.5 HP motor. The pump weight is 33 pounds each.

2.2 NEW AIR STRIPPER EFFLUENT PUMP STATION LEACHATE PUMPS

- A. The contractor shall furnish and install, as shown on the plans, two submersible Grundfos well pumps. The pump model shall be a 4-inch, product number 60S20-4. Each pump shall be fitted with a built-in non-return valve. Provide 3-phase motors of the canned type with sand-shield, liquid lubricated bearings and pressure equalizing diaphragm. The material for the pump, impeller, and motor is stainless steel 1.4301 DIN W.-Nr. 304 AISI and is suitable for vertical installation. The maximum pump speed is 3450 rpm with a design flow of 51.2 gpm at TDH of 105.1, and a 3.0 HP motor. The pump weight is 40 pounds each.

2.3. REPLACEMENT OF THE T-1 TANK LEACHATE PUMP

A. After the two new Leachate Pump Stations are installed and placed into operation, the Contractor shall remove the existing Grundfos Model 150 S 75-3 submersible pump with 7.5 hp 3 phase motor from the inside of T-1 and place the pump at a storage location at the Landfill Site. The Contractor will need to remove existing equipment as necessary to access and remove and replace the pump and shall reassemble the equipment so as to restore everything to existing conditions. All costs for removal and replacement of the pump will be included in the Contractors Lump Sum Bid.

B. Replace the existing pump with a new Grundfos Model 85S15-1 pump. The new pump shall be fitted with a built-in non-return valve. Provide 3-phase motors of the canned type with sand-shield, liquid lubricated bearings and pressure equalizing diaphragm. The material for the pump, impeller, and motor is stainless steel 1.4301 DIN W.-Nr. 304 AISI and is suitable for vertical installation. The maximum pump speed is 3450 rpm with a rated flow of 75 gpm at TDH of 40 feet, and a 1.5. HP motor. The pump weight is 33 pounds each. Provide all wiring and appurtenances required to allow operation of the new pump.

2.4 CONTROLS

- A. Pump controls are specified under electrical work.

2.5 PUMP VOLTAGE

- A. Pump voltage requirements are shown on the electrical plans.

PART 3 – EXECUTION

3.1. INSPECTION AND FACTORY TESTS

- A. Each pump furnished under these specifications shall be tested at the factory to verify individual performance (VIP). Certified copies of all test reports shall be submitted to the Engineer for approval prior to shipment. Each unit shall be hydrostatically tested in accordance with the Hydraulic Institute Standards.

3.2. INSTALLATION AND ACCEPTANCE TESTS

- A. The pumping units shall be installed in accordance with the instructions of the manufacturer and as shown on the drawings.
- B. The Contractor shall fill the Air Stripper Effluent Pump Station force main with clean water prior to startup testing. The Contractor shall provide clean water for testing operation of each pump station.
- C. The Contractor shall adjust the variable speed drive settings for each pump at the Air Stripper Influent Pump Station so as to reduce the flow rate from each pump to match the Air Stripper Effluent Pump Station pumping rate. This shall be accomplished by operating both pump stations with one pump on simultaneously and measuring the water level in the Air Stripper Effluent Pump Station. The Contractor shall continue to pump water and adjust the Air Stripper Influent Pump Station pump speed until the water level in the Air Stripper Effluent Pump Station remains the same indicating the pumped flow rate in and the pumped flow rate out match. The Contractor shall repeat the same test using the two lag pumps as lead pumps. The sufficient water supply shall be provided to demonstrate equal pumping rates at each pump station.

3.3 CLEAN OUT EXISTING T1 AND T2 TANKS

- A. After the two new Pump Stations are completed and placed into operation, the Contractor shall clean out the two existing T1 and T2 buried fiberglass tanks each of which holds approximately 40,000 gallons. All sediment and debris shall be removed safely, transported, and disposed of at the Loudoun County Solid Waste Management Facility at a location approved by the Owner. The tanks shall be flushed clean with potable water.

END OF SECTION